ASTRA 1620
DUAL DISK DRIVE
USER MANUAL

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INTRODUCTION

A disk operating system allows for communication between your computer and disk drive. Without a disk operating system, your disk drive is basically useless. A good disk operating system should have the ability to store and retrieve programs and files, erase old programs and files, copy programs and files, and duplicate an entire diskette. In addition, a disk operating system should save and load binary files, and handle such duties as initialization of diskettes and production of disk directories. We have found that the OS/A+ operating system meets these requirements quite well, and so we have included this disk operating system with your ASTRA 1620.

We have also included the OS/A+ Disk Operating System User Manual and the reference manual for OS/A+, which will be referred to as the technical reference manual. If the user has any technical or advanced questions, we suggest referring to the OS/A+ reference manual. The OS/A+ reference manual is a very well written manual, but also very complicated. The first time user of disk drives may be slightly intimidated by its complexity. OS/A+ Disk Operating System User Manual gives a very good description of the OS/A+ commands and their usage. We have tried to fully explain the commands that we feel will be needed by the everyday user. Again, the more advanced user may be more comfortable with the OS/A+ manual and find our manual burdensome.

Before using your OS/A+ disk operating system diskette, we strongly recommend reading this manual in its entirety. This will give you a better idea as to the purpose of a disk operating system. Also, reading this manual before actual usage may prevent needless damage to the diskette. See SOFTWARE LICENSE AGREEMENT (i.e., the pink sheet) for warranty.

DISKETTES

Master Diskette

The OS/A+ master diskette contains all the disk operating system programs. These programs allow your computer to communicate with your disk drive. Your master diskette should always be inserted in disk drive #1. Also the write-protect tab (i.e., the piece of tape in the right-hand corner of your diskette) should always be in place. This will insure against accidental erasure of disk operating system programs. The following programs should be present on your master copy:

DOS.SYS
INIT.COM
DUPDSK.COM
SYSEQU.ASM
DO.COM
RS232.COM
CONFIG.COM
COPY.COM
SDCOPY.COM
HELP.COM
CLRDSK.COM
MEM.LIS
INITDBL.COM
STARTUP.EXC

A back-up copy of your diskette should be made immediately. To duplicate a back-up diskette, see section on DUPDSK. Your back-up diskette will need to be formatted prior to duplicating. The DUPDSK command allows users to format a diskette, but we suggest reviewing the INIT section.

We strongly suggest making three back-up copies for your ASTRA drive: a single density to single density, a double dentisy to double density, and a single density to double density. See section on CONFIG.

System Diskettes

The system diskette (i.e., working copy) usually includes formatting and writing the DOS.SYS file to a blank diskette. Each diskette must be initialized before entering a program. If the diskette is to be used to store data files, then formatting may be all that is needed. See section on INIT.

Caring for Diskettes

In order to avoid erasure of files and programs, there are two methods available for protecting your diskette.

The easiest and probably the safest method is to use a write-protect tab provided by the manufacturer of the diskette. The tab covers the notch on the right-hand side of the diskette. The write-protect tab, when in its proper place, will guard against erasure of programs and files even during initialization. When a write-protect tab is used, new files or programs may not be written on the diskette.

The other method available is to use the PRO command. The PRO command allows the user to protect any given program or file on a diskette. When protected, the program or file cannot be written over or erased. This does not guard against erasure due to initialization. The diskette may be written to as long as the program or file name is different than the protected program or file.

Labeling of Diskettes

To avoid confusion as to what is stored on a diskette, use the labels provided by the manufacturer of the diskette. The label should be placed on the left-hand side of the diskette.

Storing Diskettes

In order to avoid damage to your "floppy" diskettes, these suggestions should be followed:

- Keep the diskettes in their envelopes when not in use.
- Do not stack the diskettes, but rather store them vertically.
- Avoid storing diskettes by magnetic fields, especially your television set.
- Avoid storing diskettes by any direct source of heat.
- Avoid storing diskettes by any liquids.

USING OS/A+

Calling Up OS/A+

The user is in the OS/A+ mode whenever the "D1:" prompt is displayed on the screen.

The master copy of OS/A+ (Version2) includes a STARTUP.EXC file. This file has been configured to run a group of commands for

the new user, including a menu of the commonly used commands. The STARTUP.EXC file may be reconfigured to run other programs (See MORE INFO.), or the user may choose to erase the STARTUP.EXC file on the back-up copies of OS/A+. Never erase any files or programs on the master copy of OS/A+!

A system diskette (Remember the system diskette is a formatted diskette with a DOS.SYS file!) will display the "D1:" prompt immediately upon turning on the computer, disk drive, and monitor.

In the direct programming mode (i.e., READY prompt), the user may be sent to the "D1:" prompt by entering DOS and pressing RETURN.

Definition of Files

There are two types of files used in programming: program files and data files. Program files are instructions given to the computer to perform specific tasks. Data files do not give instructions to the computer but rather store the data or information used by the program. The data file must be given a file name so that it may be referred to in the program.

Rules for Filenames

These rules must be followed when creating filenames:

- Filenames may not exceed eight characters.
- The characters that may be used in a filename are the letters A to Z, and the numbers 0 to 9.
- The first character of a filename must be an alphabet character.
- "Wild card" characters may not be used in a filename.
- The file names DOS.SYS, INIT.COM, DUPDSK.COM, SYSEQU.ASM, DO.COM, RS232.COM, CONFIG.COM, COPY,COM, SDCOPY.COM, HELP.COM, CLRDSK.COM, MEM.LIS, INITDBL.COM, and STARTUP.EXC are reserved for OS/A+ Version 2.

Definition of Filename Extenders

A three-character extender may be added to a filename to indicate the type of file. Some common extenders are as follows:

SYS	System file
BAS	BASIC program file
DAT	Data files
ASM	Assembly language files

Wild Cards

The OS/A+ disk operating system recognizes two "wild cards". Wild cards substitute characters in the filename. The two wild cards are '?' and '*'. "A question mark ('?') will match any character in a filename, while an asterisk ('*') will match any string of zero or more characters."

Boot Errors

The following reasons may cause boot errors!

- The diskette does not have a DOS.SYS file on it.
- The diskette is damaged.
- The diskette was incorrectly placed in the disk drive.
- The diskette is initialized to double dentisy while the drive is configured to single density, or vice-versa.

Execute Commands

In contrast to the Built in DOS commands and External DOS commands which are used only in the OS/A+ mode, execute commands are used to save, load and run the programs. The disk drive allows you to store and retrieve programs without retyping them. A short program is given below to show the user how to use these commands and the disk drive.

Using execute commands:

1. Turn on the disk drive.
2. Insert the system diskette into disk drive #1.
3. Turn on the computer and monitor.
4. To run the cartridge (i.e., programming mode), enter CAR and press RETURN.

5. Type in the following program

```
5 FOR I=1 TO 10
10 A=INT(RND(0)*10)+1
15 B=INT(RND(0)*10)+1
20 C=A+B
25 ?A;"+";B;"=";
30 INPUT C1
35 IF C1=C THEN ?"CORRECT":FOR T=1 TO
750:NEXT T:GOTO 50
40 IF C1<>C THEN ?"INCORRECT":FOR T=1 TO
750:NEXT T
50 NEXT I
55 END
```

6. Type SAVE "D:ADDITION" and press RETURN.

7. Once the READY prompt has appeared on the screen, you have successfully saved the program on your diskette.

8. Type NEW and press RETURN to erase the program from RAM (i.e., random access memory).

9. To reload the program, enter the following and press RETURN:

   LOAD "D:ADDITION"

10. After the READY prompt appears on the screen, enter RUN and press RETURN. The program will then begin. The program may also be loaded and ran with the following statement:

    RUN "D:ADDITION"

SELECTING AN OS/A+ OPTION

OS/A+ disk operating system has two different classes of commands, excluding the execute commands. The execute commands include LOAD, SAVE, RUN and any other commands used in the BASIC programming mode. (See section on USING OS/A+.) The classes are referred to as intrinsic commands and extrinsic commands. We found these command names very confusing. Therefore, intrinsic commands will be referred to as Built In DOS Commands; and extrinsic commands will be referred to as External DOS Commands. "DOS is an acronym for disk operating system." The difference between these two classes of commands is the way the computer carries out the desired process.

Built in DOS Commands

Once the DOS.SYS file has been loaded into memory, these commands are readily available without the computer having to read in any subprograms. The commands available are as follows:

CAR
DIR
END
ERA
LOA
NOS
PRO
REM
REN
RUN
SAV
SCR
UNP

Each command will be explained below.

CAR

CAR, which refers to the ATARI BASIC Computing Language Cartridge, returns the user to the READY prompt.

To use:

1. After the "D1:" prompt, enter CAR and press RETURN.

DIR

DIR refers to the disk directory. "This command allows the user to view the disk directory." The directory shows the amount of sectors used by each file.

To use:

1. After the "D1:" prompt, enter DIR and press RETURN. This will list the directory for drive #1. If the user wishes to view the directory for drives #2 to #4, enter the following and press RETURN.

DIR Dn:

The 'n' refers to the number of the disk drive.

2. To view only certain files, enter the following and press RETURN.

DIR Dn:**.COM

This will print a directory of all files with the extension of .COM.

END

This command "stops batch execution from within an execute file." See OS/A+ technical reference manual for further explanation.

ERA

ERA refers to erase. ERA will erase (i.e., kill, delete, etc...) files from the disk. ERA is irreversible. Once a file is deleted it cannot be retrieved. BE CAREFUL!

To use:
1. After the "D1:" prompt, enter the following and press RETURN.

ERA Dn:EXAM.*

The 'n' refers to the number of the disk drive. This will erase any file with the filename of EXAM on the drive specified. The user may also erase according to a particular extension name.

LOA

This command "allows the user to load binary load image files into user memory." See OS/A+ technical reference manual for further explanation. This is not the same as LOAD which was mentioned in USING OS/A+.

NOS

This command "turns off command echo to screen during batch." See OS/A+ technical reference manual for further explanation.

PRO

PRO refers to protect. A file which is protected cannot be written on or erased. A file which has been protected displays an asterisk (*) to the left-hand side of the filename on the directory.

To use:
1. After the "D1:" prompt, enter the following and press RETURN.

PRO Dn:DOS.SYS

This will protect the DOS.SYS file on drive #1.

If the user wishes to protect files on drive #2 to #4, enter the following and press RETURN.

PRO Dn:DOS.SYS

The 'n' refers to the number of the disk drive.

2. Files with a common extension can be protected at one time by entering the following and pressing RETURN.

PRO *.COM

Any file with the extension .COM will be protected.

REM

This command "facilitates remarks to the screen during batch." See OS/A+ technical reference manual for further explanation.

REN

REN refers to the renaming of a file to a new filename.

To use:

1. After the "D1:" prompt, enter the following and press RETURN.

REN MEM.LIS MEMO.LIS

This will rename the file MEM.LIS to MEMO.LIS for drive #1.

If the user wishes to rename files on drive #2 to #4, enter the following and press RETURN.

REN Dn:MEM.LIS MEMO.LIS

The 'n' refers to the number of the disk drive.

2. Files with a common extension can also be renamed by entering the following and pressing RETURN.

REN *.COM *.BAS

This will rename any file with an extension of .COM to .BAS. A protected file cannot be renamed.

RUN

"This command transfers control to an address in memory." See OS/A+ technical reference manual for further explanation.

SAV

This command "allows the user to write portions of memory to disk files in standard binary file format." See OS/A+ technical reference manual for further explanation. This is not the same as SAV which was mentioned in USING OS/A+.

SCR

This command "causes batch commands to be echoed to the screen." See OS/A+ technical reference manual for further explanation.

UNP

UNP refers to unprotect. UNP is the opposite of PRO. A file which is unprotected can be written on or erased. An unprotected file displays no asterisk (*) on the directory. If a file has not been protected, then it is automatically unprotected.

To use:
1. After the "D1:" prompt, enter the following and press RETURN.

UNP DOS.SYS

This will unprotect the file DOS.SYS for drive #1, assuming that DOS.SYS has been previously protected.

If the user wishes to unprotect files on drive #2 to #4, enter the following and press RETURN.

UNP Dn:DOS.SYS

The 'n' refers to the number of the disk drive.

2. Files with a common extension can be unprotected at one time by entering the following and pressing RETURN.

UNP Dn:**.SYS

Any file with the extension .SYS will be unprotected.

External DOS Commands

These commands use subprograms to carry out their particular functions. The commands available are as follows:

BASIC
C65
CONFIG
COPY
DO
DUPDBL
DUPDSK
HELP
INIT
MAC65
RS232

BASIC

"This command loads and executes the BASIC A+ language." BASIC A+ may be purchased separately. For further explanation, see the technical reference manual for OS/A+.

C65

"This command loads and executes OSS C/65 compiler." The C/65 may be purchased separately. For further explanation, see the technical reference manual for OS/A+.

CONFIG

This command "allows the user to change the status of a double density drive." That is, the ASTRA 1620 may be configured either as a single density, single sided drive or a double density, single sided drive.

To use:

1. Enter CONFIG and press RETURN to view the status of the disk drives. Both drive #1 and drive #2 should be single density the first time this operating system is used.

2. Enter the following and press RETURN.

CONFIG 2D

This will configure drive number two to a double density, single sided drive.

CONFIG 2S

This will return the drive to a single density, single sided drive. Drive #1 can also be changed to a double density drive by entering the following:

CONFIG 1D

NOTE: Once a drive has been configured to double density, then the disk must be reinitialized and recopied. The procedures for this are as follows:

```
CONFIG 2D
INIT (See section on INIT)
COPY D1:**.* D2:**.* -WQ
```

The -WQ asks the user to insert the diskette to be copied and have a query before each file transfer.

COPY

This command will copy files either on the same disk or on an alternate disk. The most common usage would be to copy a file on drive #1 to drive #2.

To use:

1. Enter the following and press RETURN.

COPY D1:**.* D2:**.* -Q

This will copy every file from the disk in drive #1 on the disk in drive #2. If only a single file is to be copied from one drive to another, then enter the name of the file rather than the asterisks after "D1:" and "D2:". To have a query before each file transfer, enter -Q after the last filename.

If the user wants to copy the same file on the same disk, then the following procedures must be used:

COPY D1:DOS.SYS D1:DOS1.SYS

The name of the second file must be different than the original filename.

DO

"This command allows the user to perform several operations with one command line." This does not necessarily just include the Built in DOS Commands or the External DOS Commands. The user may load a program and then list it. For further suggestions, see the OS/A+ technical reference manual.

To use:

1. The following example will be used to explain this function. We want to rename MEM.LIS to MEMO.LIS, but MEM.LIS is protected. We must first unprotect MEM.LIS, rename MEM.LIS to MEMO.LIS, and then protect MEMO.LIS. Enter the following and press RETURN after the "D1:" prompt.

DO UNP MEM.LIS; REN MEM.LIS MEMO.LIS; PRO MEMO.LIS

The above will be performed on disk drive #1 only, but the DO command can also direct control to other drives. This is done by entering the 'Dn:' prefix before specifying a function.

DUPDBL

This command "provides fast copying of entire double density diskettes." Both drives must be configured to double density and both disks must be initialized to double density before using this command. If these two requirements have been met, then DUPDBL is faster to use than COPY.

To use:

1. Enter which disk drive you wish to use for the source disk drive and press RETURN. Only disk drives #1 to #4 may be used.

2. Enter which disk drive you wish to use for the destination drive and press RETURN. Only disk drives #1 to #4 may be used.

3. If the destination disk has not been previously formatted then duplication cannot occur. If the disk has not been formatted, press [Y]; or if the disk has been formatted, press [N].

4. Follow the directions displayed on the screen until the duplication is complete.

DUPDSK

DUPDSK refers to duplicate disk. This duplicates the entire contents on one disk to another disk. This command should be used immediately to back up your master copy of OS/A+.

To use:

1. After the "D1:" prompt, enter DUPDSK and press RETURN.

2. After the source disk drive prompt, enter either 1, 2, 3, or 4 corresponding to the appropriate disk drive and press RETURN. The source disk drive is the drive which contains the 'from' diskette whereas the destination disk drive is the drive which contains the 'to' diskette.

3. After the destination disk drive prompt, enter either 1, 2, 3, or 4 corresponding to the appropriate disk drive and press RETURN.

NOTE: Those using the same drive for the source and destination disk must follow the prompts carefully. That is, the user is asked to insert the source disk, remove the source disk, insert the destination disk, and remove the destination disk until the duplicating process is complete.

4. If the destination disk has not been previously formatted then duplication cannot occur. If the disk has not been formatted, press [Y] and RETURN; or if the disk has been formatted, press [N] and RETURN.

5. Once the duplicating is done, the user is asked to copy the same disk again. If the user wishes to duplicate another disk, press [Y] and RETURN; or if the user does not want to duplicate another disk, press [N] and RETURN.

HELP

HELP gives the user a menu of system commands. In the OS/A+ technical manual, this command was recommended for the beginning user of this operating system. We feel this command is a quick and easy way to use many of the Built in and External DOS commands, and even the advanced user of this operating system may find it useful. The commands available through HELP are as follows:

[1] enter CARtridge
[2] COPY files
[3] disk DIRectory
[4] DUPFILE
[5] ERAse files
[6] PROtect files
[7] RENname files
[8] UNProtect files
[9] exit to OS/A+

Any command may be chosen by entering its corresponding number and pressing RETURN. Brief directions on using these commands through HELP will be given below, but for further explanation, see the appropriate sections in this manual.

1: enter CARtridge

After entering [1], control is sent to the cartridge which is plugged into the slot on the ATARI computer. This should then send the user to the READY prompt.

2: COPY files

Files may be copied either on the same disk or on an alternate disk. Files (or programs) should always be backed-up on another disk.

To use:

1. Enter the 'from file' and press RETURN.
2. Enter the 'to file' and press RETURN.

3: disk DIRectory

After [3] is entered, press RETURN after 'FILENAME' is displayed on the screen and the entire disk directory may be viewed.

4: DUPFILE

This command is similar to copy, but it is intended for single drive users only. This option is not as fast as the COPY command.

To use:

1. Enter the filename(s) to be duplicated and press RETURN.
2. Insert the 'to disk' and press RETURN.
3. Insert the 'from disk' and press RETURN.
4. Continue following the directions on the screen until the "D1:" prompt is presented.

5: ERAse files

This command permanently erases files on a disk.

To use:

1. Enter the filename(s) and press RETURN.

6: PROtect files

This command will protect files from being written on or erased.

To use:

1. Enter the filename(s) to be protected and press RETURN.

7: RENname files

This command will rename previously named files.

To use:

1. Enter the 'from file' and press RETURN.
2. Enter the 'to file' and press RETURN.

8: UNProtect files

This command will unprotect previously protected files.

To use:

1. Enter the filename and press RETURN.

9: exit to OS/A+

This command returns the user to the "D1:" prompt.

INIT

This command formats a blank disk which will allow the user to save, load, write, or read files and programs to the disk. Every disk must be initialized except for the master copy of OS/A+ (Version 2). The master copy has already been initialized, and reinitialization will completely erase all your files, protected or not. Unless your using a new diskette, you should always check the directory before initializing, in order to avoid erasing valuable material. Along with initializing, the diskette should contain a DOS.SYS unless otherwise specified. Some software packages require only an initialized diskette, especially if the primary function of the diskette is to store data files.

To use:

1. After the "D1:" prompt, enter INIT and press RETURN.

2. The following menu is given:

[1] FORMAT DISK ONLY.
[2] FORMAT DISK AND WRITE DOS.SYS.
[3] WRITE DOS.SYS ONLY.
[4] RETURN TO OS/A+.

Any option may be chosen by entering its corresponding number and pressing RETURN.

3. If 1, 2, or 3 is chosen, enter the number of the drive to be formatted and press RETURN.

4. The function number and the drive number will be displayed on the screen. If they are both correct, enter [Y] and press RETURN. The disk will then be formatted. If either the function number or the drive number is incorrect, enter [N] and press RETURN. The menu will be repeated.

MAC65

This command "loads and executes the MAC/65 macro assembler." The MAC/65 may be purchased separately. For further explanation, see the technical reference manual for OS/A+.

RS232

A program which "installs the serial device handlers ("Rn:") for use with the ATARI 850 Interface Module." This can only be used by those who own the ATARI 850 Interface Module. For further explanation, see the technical reference manual for OS/A+.

MORE INFO

STARTUP.EXC File

A STARTUP.EXC file is used "to make a disk boot up, and execute a program automatically". This is commonly called an AUTOBOOT. For those who have used the ATARI DOS, "the STARTUP.EXC file operates along the same principles as the AUTORUN.SYS file."

To create a STARTUP.EXC file:

1. The following programs must be on your diskette before a STARTUP.EXC file can be created.

DOS.SYS
COPY.COM
DO.COM

Also the program which you plan to have executed immediately must be present on the diskette.

2. After the "D1:" prompt, enter the following and press RETURN.

COPY E: D1:STARTUP.EXC

The 'E' refers to the screen Editor device.

3. The cursor will then be in the top left hand corner. Enter the following and press RETURN.

DO CAR; RUN "D:(filename)"

The name of the program to be executed must be entered where filename is shown above (Do not use parentheses!).

4. Press CONTROL and 3 at the same time. This will cause the STARTUP.EXC file to be written on the diskette.

5. After the "D1:" prompt, enter DIR and press RETURN. The following files must be present on the diskette before the START-UP.EXC file works properly.

DOS.SYS
DO.COM
STARTUP.EXC.
The program used in the STARTUP.EXC file.

6. Make sure your BASIC cartridge is in its proper place.

Program Commands

The commands which follow are used to store and retrieve files and programs. These commands are generally used in the direct programming mode and without a line number.

1. ENTER/LIST
2. LOAD/SAVE
3. RUN

The commands will be explained below.

1: ENTER/LIST

An "untokenized" file contains the standard ATASCII text characters. The printout of an untokenized file is similar to the printout of a BASIC program. The storage and retrieval of an untokenized file are LIST and ENTER, respectively.

The LIST command will list (i.e., save) the file (or program) currently in memory to the diskette. A filename must be designated before listing the file to the diskette. A file that has been LISTed to a diskette must be retrieved by the ENTER command.

To LIST a program, enter the following and press RETURN.

LIST "Dn:(filename)"

The 'n' refers to the number of the disk drive.

To LIST a range of lines to the diskette, enter the following and press RETURN.

LIST "Dn:(filename)",Line #,Line#

The 'n' refers to the number of the disk drive. The file will be LISTed to the diskette starting with the first designated line number and ending with the second designated line number.

The ENTER command will retrieve a file (or BASIC program) from memory that has been LISTed to the disk. This command is similar to the LOAD command. While the program is being ENTERed, each line of the program or file is being checked for proper syntax. If an error is encountered, the line will be listed with the cursor placed on the suspected problem. The error will be placed in memory even if it is not corrected, but the program will not RUN before doing so.

To ENTER a program, enter the following and press RETURN.

ENTER "Dn:(filename)"

The 'n' refers to the number of the disk drive. To execute the program, enter RUN and press RETURN.

2: LOAD/SAVE

A "tokenized" file is an abbreviated version of a BASIC program or file. Rather than ATASCII characters, one byte "tokens" are used to represent the BASIC commands. The storage and retrieval of a tokenized file are SAVE and LOAD, respectively.

The SAVE command will store (i.e., save) a BASIC program (or file) on a diskette in its tokenized format (not ATASCII). This format will save room on your diskette. Programs that have been SAVEd on your diskette must be retrieved by either the LOAD or RUN command.

To SAVE a program, enter the following and press RETURN.

SAVE "Dn:(filename)"

The 'n' refers to the number of the disk drive. A program may be saved more than once on the same diskette by entering different filenames.

The LOAD command will retrieve "a program that has been SAVEd to the diskette and place it in BASIC's memory." There is no syntax checking while your program is being LOADed. Only programs that have been SAVEd (not LISTed) may be LOADed.

To LOAD a program, enter the following and press RETURN.

LOAD: "Dn:(filename)"

The 'n' refers to the number of the disk drive.

3: RUN

This command will LOAD and RUN a tokenized file. Therefore, any untokenized file may not be loaded into memory by this command. Also programs may be chained by this command. However, the second program must be independent of the first program, since the first program is erased from RAM.

To RUN a program, enter the following and press RETURN.

RUN "Dn:(filename)"

The 'n' refers to the number of the disk drive.

File Commands

The commands which follow are used to manipulate the date within a file. These commands are generally used within a program and thus need to be written with a line number (not direct mode).

1. INPUT/PRINT
2. NOTE/POINT
3. OPEN/CLOSE
4. PUT/GET
5. XIO

The commands will be explained below.

1: INPUT/PRINT

The INPUT command is "used to request data from the specified file number (or keyboard)." The data line should not exceed 127 characters.

To use INPUT, enter the following and press RETURN.

INPUT (#fn) var (,var...)

The 'fn' refers to the file number. Only numbers one to five may be used as a file number. Without the use of a file number after the INPUT statement, the data, either string or numeric, will be requested from the keyboard with the "?" as a prompt. If a file number is used, the data is taken from the specified file in the ATASCII form. Data may be taken from a file only if the file has been properly OPENed (See section on OPEN.).

The 'var' refers to either the numeric or string variables.

The PRINT command "puts the ASCII equivalents of the given expressions to the file specified or to the screen." The PRINTed records should not exceed 127 characters.

To use PRINT, enter the following and press RETURN.

PRINT (#fn;) exp (,exp...)

The 'fn' refers to the file number. Only numbers one to five may be used as a file number. If a file number is used, "the specified variables are PRINTed to the disk file that has been previously OPENed using the same file number."

The "exp" refers to either the string expression or numeric expression.

2: NOTE/POINT

The NOTE and POINT commands allow the user to access records created in a sequential file in a nonsequential manner (i.e., randomly). The program which follows shows how to use the NOTE and POINT command:

```
100 DIM SECTOR(10), BYTE(10), NAME$(30), ADD$(30),
CSZ$(30), PHONE$(15)
110 OPEN #1,8,0, "D:ADDFILE": OPEN #2,8,0, "D:AF.INX"
120 REC=REC+1:? "I": POSITION 2,4:? "ENTER NAME:";:
INPUT NAME$
130 IF NAME$="" THEN GOTO 500
140 POSITION 2,6:? "ENTER ADDRESS";: INPUT ADD$
150 POSITION 2,8:? "ENTER CITY,ST,ZIP ";: INPUT CSZ$
160 POSITION 2,10:? "ENTER PHONE ";: INPUT PHONE$
170 NOTE #1,SEC,BYT
180 PRINT #1;NAME$
190 PRINT #1:ADD$
200 PRINT #1;CSZ$
210 PRINT #1;PHONE$
220 PRINT #2;SEC
230 PRINT #2;BYT
240 IF REC=10 THEN 500
250 GOTO 120
500 CLOSE #1:CLOSE #2
520 OPEN #1,4,0 "D:ADDFILE": OPEN #2,4,0,"D:AF.INX"
530 FOR I=1 TO REC: INPUT #2,SEC:SECTOR(I)=SEC
540 INPUT #2,BYT: BYTE(I)=BYT: NEXT I
550 ? "IPRINT RECORDS": POSITION 2,6: ?
```

```
"ENTER RECORD NUMBER ";: INPUT REC
560 SEC=SECTOR(REC): BYT=BYTE(REC)
570 POINT #1,SEC,BYT
580 INPUT #1,NAME$
590 INPUT #1,ADD$
600 INPUT #1,CSZ$
610 INPUT #1,PHONE$
620 ? NAME$: ? ADD$: ? CSZ$:? : ? PHONE$
630 FOR W=1 TO 600: NEXT W: GOTO 550
```

3: OPEN/CLOSE

The OPEN command "prepares a file for access and assigns it a file number." This allows for future referencing of files through the other file commands (e.g., CLOSE, GET, INPUT, PRINT, PUT).

To OPEN a file, enter the following and press RETURN.

OPEN #fn,aexp1,aexp2,"D:(filename)"

The 'fn' refers to the file number. Only numbers one to five may be used as a file number.

The 'aexp1' refers to the I/O mode. The following are the most commonly used I/O modes:

4 INPUT
6 DIRECTORY ACCESS
8 OUTPUT
9 APPEND
12 INPUT/OUTPUT

The 'aexp2' refers to the device dependent value which is usually zero (0).

The filename must be "a proper OS/A+ filename."

The CLOSE command "disassociates the file number (channel) and file which were associated by a previous OPEN statement." Any file that has been OPENed for file output should be CLOSEd! UnCLOSEd files are often the cause of crashed diskettes. Both the END and RUN command will CLOSE all OPENed files.

To CLOSE a file, enter the following and press RETURN.

CLOSE #fn

The 'fn' refers to the file number. Only numbers one to five may be used as a file number. The user may wish to use the CLOSE statement within a FOR...NEXT loop to make sure all files are closed.

4: PUT/GET

The PUT command is "used to output a single byte of data to a specified file." The file must have been properly OPENed before using the PUT statement. Data PUT into a file can only be retrieved by the GET command.

To use the PUT command, enter the following and press RETURN.

PUT #fn,avar

The 'fn' refers to the file number. Only numbers one to five should be used as a file number. The 'avar' refers to an arithmetic variable.

The GET command is "used to retrieve a single byte of data from a specified disk file." The file must have been previously OPENed using the correct file number. To GET data from a diskette, it should have been previously PUT there.

To use the PUT command, enter the following and press RETURN.

GET #fn,avar

The 'fn' refers to the file number. Only numbers one to five should be used as a file number. The 'avar' refers to any numeric variable.

5: XIO

The XIO command is a BASIC "catch-all INPUT/OUTPUT command." This is used to access a particular device or file not previously accessible through any of the BASIC commands. For further explanation of the XIO command, see the technical reference manual.

To use the XIO command, enter the following and press RETURN.

XIO subcommand,#fn,aux1,aux2,"D:(filename)"

The 'fn' refers to a file number. Often the file should be unOPENed. The 'aux1' and 'aux2' are generally zero. The filename must be "a proper OS/A+ filename."

REFERENCES

A Reference Manual for OS/A+ (Optimized System Software, Inc., 1982).

Disk Operating System II Reference Manual (ATARI, Inc., 1981).

LIST OF ERRORS

ERROR CODE	MESSAGE
1	No error or warning
2	Truncated ASCII line
3	End of file look ahead
128	Operation aborted
129	File already OPENed
130	Device does not exist
131	File is write only
132	Invalid Command
133	Device/File not OPENed
134	The IOCB specified is invalid
135	File is read only
136	End of file
137	Truncated record error
138	Device timeout error
139	Device NAK error
140	Serial framing error
141	Cursor out of range for specific graphic mode
142	Serial bus overflow
143	Check sum error
144	Device done error or write protect error
145	Illegal screen mode error

146	Function has not been implemented in the device handler
147	Not enough RAM for the graphics mode
160	Either a drive # between 1-4 was not entered or drive was not turned on
161	Too many OPENed files
162	Disk FULL
163	Fatal system error
164	File mismatched
165	Bad file name
166	The byte count in your POINT Call was greater than 125 (single density) or 253 (double density)
167	The file specified is locked
168	Software interface for the specific device received an invalid command
169	Space allocation for the directory has been used up
170	The file you requested does not appear on this diskette
171	Byte in a file is not OPENed for update
172	Tried to OPEN a DOS I with DOS II
173	Bad sectors found during initializing

For a more complete description of the error messages, see the OS/A+ technical reference manual.